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Some new Hybrid Oaks from the Southern States.

BY JOHN K. SMALL.

(PLATES 232-235.)

The following is a record of some observations on several interesting forms of *Quercus* growing in North Carolina and Georgia, together with a striking hybrid existing in two well-marked forms, found in Lake county, Florida, by Mr. Geo. V. Nash, during his collecting trip of last season.

QUERCUS PHELLOS × *Q. DIGITATA*.

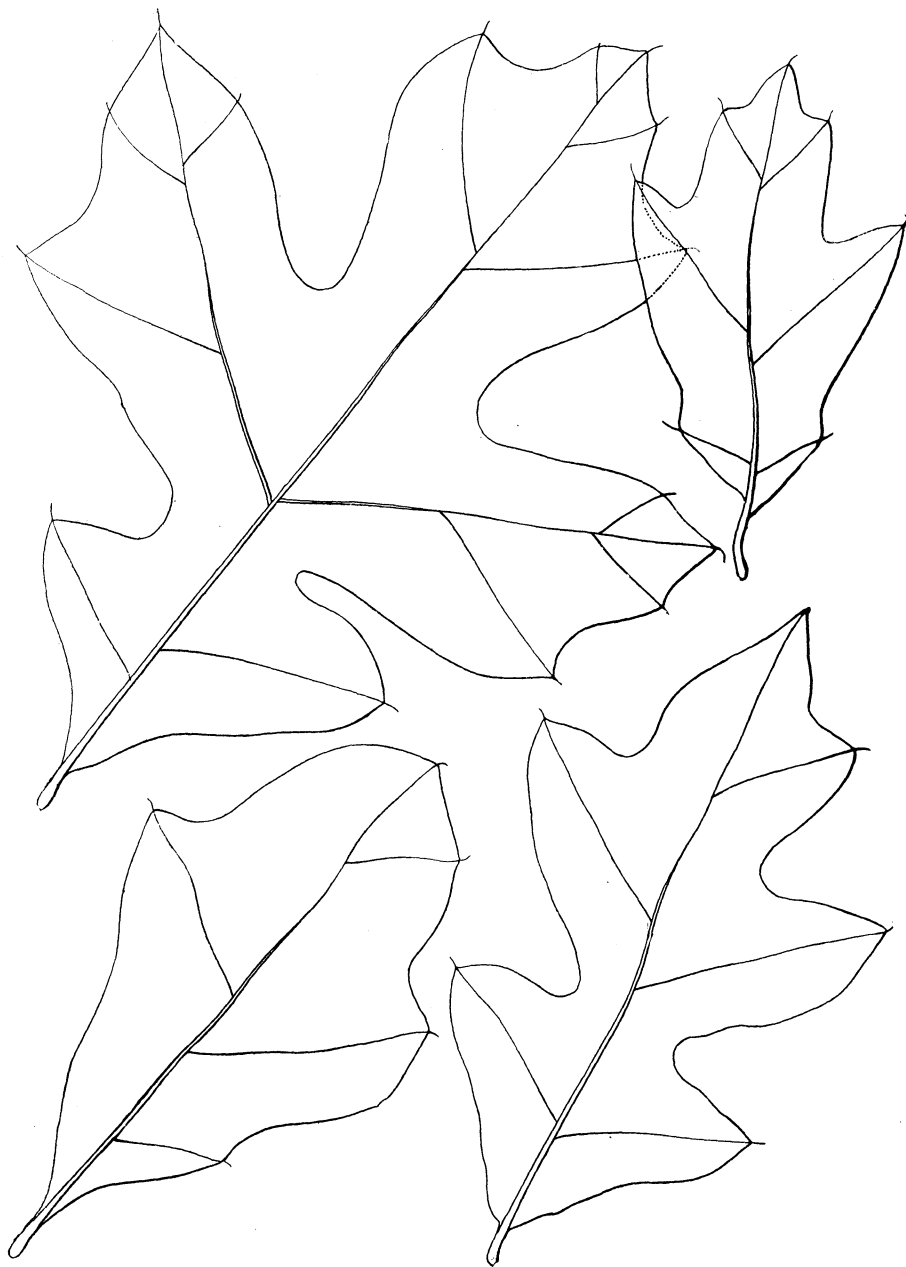
A large and stout tree with rough scaly bark, reaching a height of from twenty to thirty-five meters, and having a trunk diameter ranging from six to nine decimeters. Trunk forking several feet from the ground, the divisions thence branching, the branches rather erect and the branchlets straggling; leaves oblong, obovate or oblanceolate, 5-20 cm. long, 2-10 cm. broad, mostly entire and undulate or somewhat crisped, or more or less two-lobed or three-lobed near the apex, acute or obtuse at the apex, acute, obtuse or subcordate at the base, the upper surface dark-green and glabrous, the lower brown and more or less tomentose with reddish brown, stellate hairs, especially about the midrib and principal nerves; mature fruit not seen. (Plate 232.)

Hills west of the Falls of the Yadkin River, North Carolina.

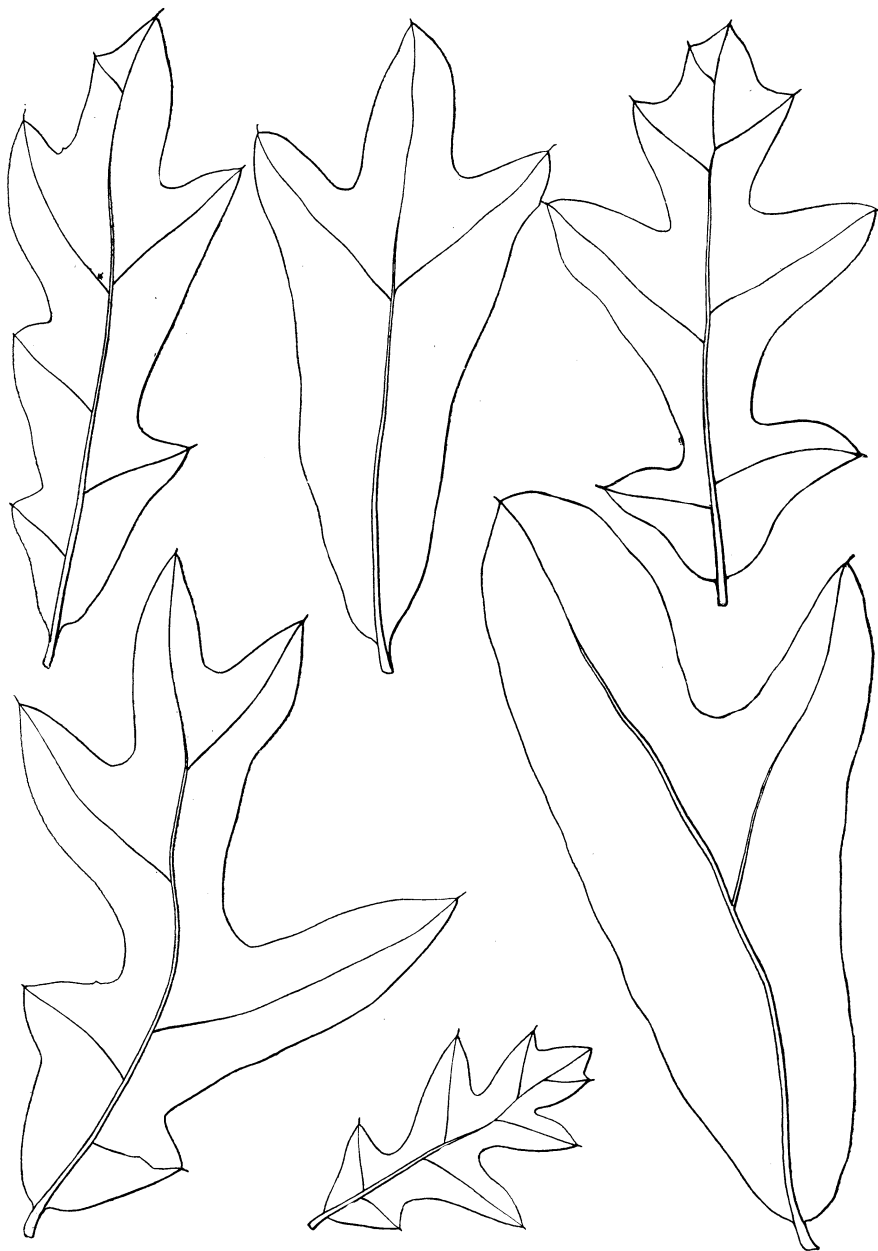
In 1892 I found a small grove of peculiar looking oak trees in a very shallow depression in the foot-hills of the Falls Mountains, just west of the Falls of the Yadkin River, in Stanley county, North Carolina. Specimens were collected, but there was not time for a thorough investigation of the case. The specimens suggested a form of *Q. Rudkini* (*Q. Phellos* × *Q. nigra*), and some were distributed under that name. Each succeeding year I have observed the trees and their surroundings, and am now confident that the parents are not those of *Q. Rudkini*, but *Q. Phellos* and *Q. digitata*, the two prevailing species of the immediate region. *Q. nigra*, one of the undoubted parents of *Q. Rudkini*, was not observed within several miles. The form of *Q. digitata*, which is apparently one of the parents of the hybrid under consideration, is not that with long, falcate leaf-lobes, but one common through the pine woods in the middle country of the Southern States. Its leaf is not as deeply lobed and has a more cuneate



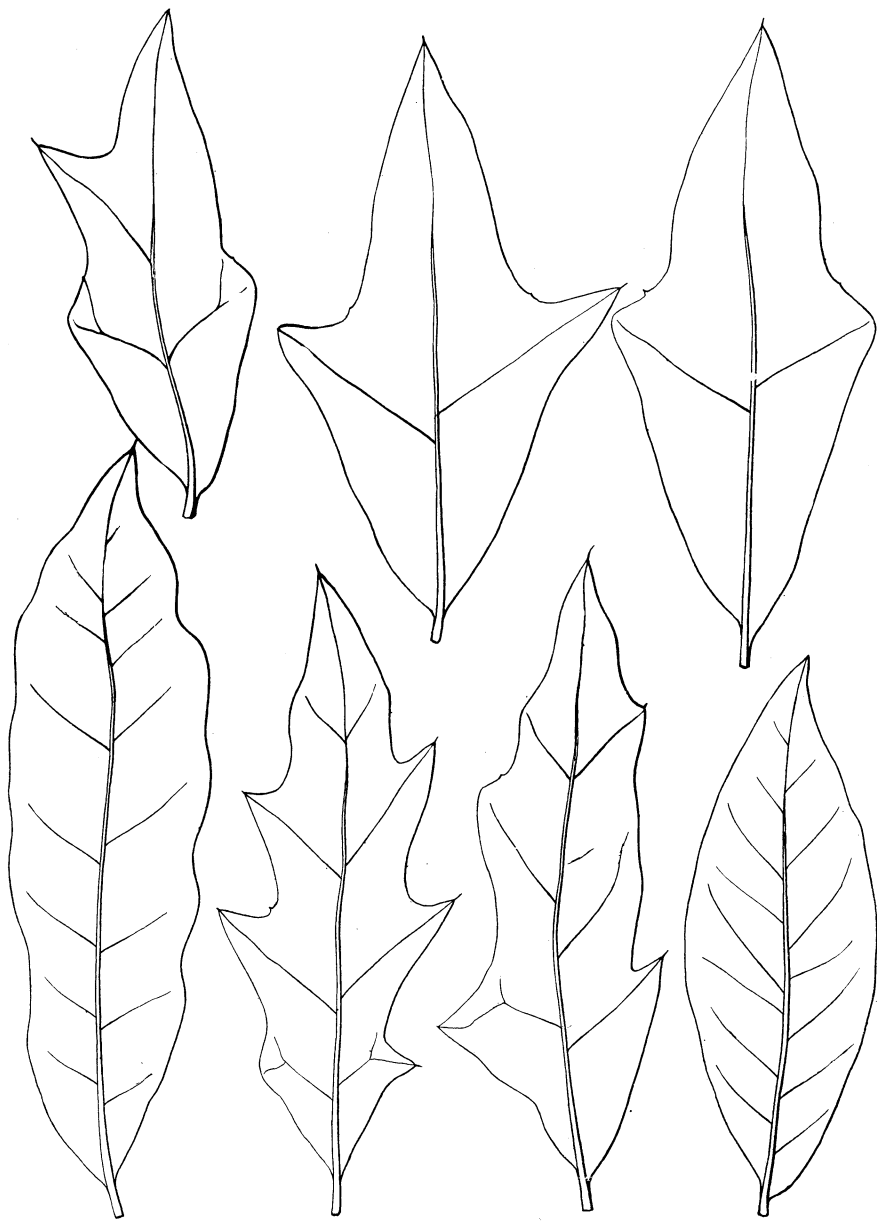
QUERCUS PHELLOS \times QUERCUS DIGITATA.



QUERCUS GEORGIANA \times QUERCUS NIGRA.



QUERCUS CATESBAEI \times QUERCUS CINEREA.—FORM A.



QUERCUS CATESBAEI \times QUERCUS CINEREA.—FORM B.

outline. As in the case of the following hybrid, this one produces on the same branches leaves almost identical in shape with those of the parents. Many, however, are intermediate, in various degrees resembling one or the other of the parent forms. The texture is about intermediate, and the pubescence on the lower surface less than in *Q. digitata* and much more than exists in true *Q. Phellos*.

The cup and acorn, although not mature, each exhibit characters which suggest *Q. digitata* rather than *Q. nigra*. Most of the trees noticed had the peculiar habit of forking about three feet from the ground into two erect secondary trunks. This character, together with the striking irregularity in the shape of the foliage, makes the trees quite conspicuous among their associates.

QUERCUS GEORGIANA \times Q. NIGRA.

A small tree of a dark-green color and a somewhat straggling mode of branching, ranging from three to ten meters in height and having a trunk diameter varying from ten to twenty-five centimeters clothed with a dark, smooth, glabrous bark, which becomes rough on the trunk. The leaves are mostly obovate in outline, sometimes oblong, 4–20 cm. long, 2.5–15 cm. broad, 3–5-lobed, dark green and shining above, brown and dull beneath, glabrous on both surfaces, except a small tuft of stellate hairs in the axils of the nerves on the lower side, obtuse or acute, equilateral or inequilateral at the base, the sinuses either shallow or deep, sometimes penetrating almost to the midrib; the lobes rounded or square-oblong and slightly lobed at the ends, all ending in a slender apiculation; fruit 12–15 mm. long, 13–16 mm. broad, short-stalked, peduncle 4–6 mm. long; cup saucer-shaped or slightly turbinate, reddish, the scales triangular, the acorn depressed-globose, pubescent, sometimes sparingly striped, ending in a short, abrupt apiculation. (Plate 233.)

Northern slope of Stone Mountain, DeKalb county, Georgia.

On the northern slope of Stone Mountain, at an altitude of about 1300 feet, there is a grove of stunted trees of various species of oaks, *Quercus Georgiana* and *Q. nigra* predominating. I had been in the grove a number of times, but noticed nothing peculiar until January, 1894, when my attention was called to some odd shaped leaves on the ground and anomalous acorns on the branches overhead. This material suggested a hybrid form. Last September I visited the same spot to secure fresh foliage from the trees and make some further observations.

Q. Georgiana and *Q. nigra* were the only species in the immediate vicinity, and the trees in question appear intermediate between the two. In place of the graceful port of the preceding species there was a certain amount of the rugged habit of the latter. The texture of the foliage is intermediate, and leaf forms suggesting both species occur on the same branches. Mature fruit also has traces of the characters of that of both the parents. The accompanying plate gives some of the extreme leaf forms.

QUERCUS CATESBAEI \times Q. CINEREA.

Form A, in which Q. cinerea predominates (No. 1586).

A small tree with the habit of *Q. cinerea*, ranging from two and one-half to four meters in height, with a trunk diameter ranging from six to twelve centimeters, branching about one meter from the ground; the branches somewhat spreading, clothed with a smooth, striate bark; the young shoots tomentose with dark-colored trichomes. The leaves are narrowly obovate or oblanceolate, sometimes elliptic or lanceolate, 5–15 cm. long, 2–6 cm. broad, entire, undulate and more or less crisped or partially 3–7-lobed, either on one side or on both, acute or acuminate at both ends, short-petioled or sessile, the upper surface light and very bright green, the lower surface lighter but rather dull and more or less tomentose, the midrib and nerves white but not prominent above, prominent beneath, the lobes short-apiculate; cup hemispheric-turbinate, 13–14 mm. broad, 10 mm. high, nearly sessile. (Plate 234.)

Growing in dry, sandy soil, in high pine lands on the road between Umatilla and Lake Ella (about two miles from the latter place) in Lake county, Florida.

Form B, in which Q. Catesbaei predominates (No. 1577).

A small tree, with much the habit of *Q. Catesbaei*, reaching a height of two or three meters and having a trunk diameter of six to nine centimeters, the trunk branching from within 3 or 5 dm. of the ground, the branches more spreading than in the former. Branchlets conspicuously marked with white lenticels, the young twigs white-tomentose; leaves mostly oblong in outline, sometimes obovate, 6–15 cm. long, 3–10 cm. broad, usually 5–7-lobed, sometimes 2–3-lobed or nearly entire, more or less irregular and inequilateral, acute or obtuse at the base, short-petioled, the lobes narrow, acute and apiculate by a long, sharp bristle, somewhat tomentose beneath, the nerves prominent and conspicuous on both surfaces. Flowers and fruit not seen. (Plate 235.)

Grows in dry, sandy soil in high pine lands, on the road between Umatilla and Lake Ella (about three-fourths of a mile from the latter place) in Lake county, Florida.